

1991

## 75 Annual Meeting, 1991. Secretary's Report and Financial Statement

Academy Editors

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### Recommended Citation

Editors, Academy (1991) "75 Annual Meeting, 1991. Secretary's Report and Financial Statement," *Journal of the Arkansas Academy of Science*: Vol. 45 , Article 3.

Available at: <http://scholarworks.uark.edu/jaas/vol45/iss1/3>

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# PROCEEDINGS ARKANSAS ACADEMY OF SCIENCE

Volume XXXV

1991

Robert Watson  
President

Michael W. Rapp  
President-Elect

John D. Rickett  
Secretary

Robert Wiley  
Treasurer

NAAS Delegate

Henry Robison  
Historian

## Secretary's Report

### MINUTES OF THE SEVENTY-FOURTH MEETING - APRIL 1991

#### FIRST BUSINESS MEETING

The meeting was called to order at 11:43 by President Watson.

1. Watson called for a representative of the Local Arrangements Committee or UAF to welcome the Academy; no response.
2. Watson recognized the Historian, H.W. Robison for a statement. This is the 75th Meeting of the Academy, the 12th time in Fayetteville. Observe the display of Academy history; Robison plans to set up this display at each annual meeting and still would like to have pictures and historical sketches.
3. Watson recognized the Secretary for the distribution of the minutes of last year's meetings and opportunity for questions and corrections. Any corrections should be submitted to me Secretary in written form before the second business meeting. Secretary also requested any motions, announcements and resolutions to be submitted in written form.
4. Watson recognized the Treasurer, Robert Wiley, for distribution and explanation of the financial report. No questions or comments came forth. Watson appointed an Auditing Committee, Stan Trauth (ASU), David Saughey (USFS), and Maurice Kleve (UALR), who will examine Wiley's books and report at the second business meeting.

#### ARKANSAS ACADEMY OF SCIENCE ANNUAL FINANCIAL STATEMENT (20 MARCH 1990 TO 20 MARCH 1991)

ANNUAL MEETING 5-6 APRIL 1991  
UNIVERSITY OF ARKANSAS, FAYETTEVILLE, AR

#### FUNDS


Balance Approved by Audit on 7 April 1990	16,863.31
Total Income (Page 2)	13,970.40
Total Expenses (Page 3)	- 9,715.68
Balance for the Year	4,254.72
<b>TOTAL FUNDS AS OF 20 MARCH 1991</b>	<b>\$21,118.03</b>

#### DISTRIBUTION OF ACCOUNTS

Interest Bearing Checking Account (Union Bank and Trust Co., Monticello, AR)	2,797.36
Certificates of Deposit	
Dwight Moore Endowment (Heritage Federal Savings and Loan - Monticello - No. 504891 - 6.80% Interest)	1,730.68

Life Membership Endowment (Heritage Federal Savings and Loan - Monticello - No. 504883 - 6.80% Interest)	8,144.90
AAS Endowment (Heritage Federal Savings and Loan - Monticello - No. 507912 - 7.80% Interest)	4,845.09
AAS General CD (Heritage Federal Savings and Loan - Monticello - No. 507920 - 7.80% Interest)	3,600.00
<b>TOTAL</b>	<b>\$21,118.03</b>

Respectfully Submitted,

  
Robert W. Wiley, AAS Treasurer

Page 2. Financial Statement, Arkansas Academy of Science

INCOME: 20 March 1990 to 20 March 1991

1. INDIVIDUAL MEMBERSHIPS		
a. Regular	2,700.00	
b. Sustaining	240.00	
c. Sponsoring	90.00	
d. Life	550.00	
e. Associate	40.00	
	3,620.00	3,620.00
2. INSTITUTIONAL MEMBERSHIPS		2,100.00
3. PROCEEDINGS, LIBRARY SUBSCRIPTIONS		453.00
4. PROCEEDINGS, MISC. SALES (UAF)		2,174.46
5. PROCEEDINGS, PAGE CHARGES		2,750.00
6. ANNUAL MEETING: ARKANSAS STATE UNIVERSITY - 6-7 APRIL 1990		1,640.25
7. INTEREST		
a. Interest Bearing Checking Account	88.35	
b. Dwight Moore Endowment	116.78	
c. Life Membership Endowment	604.34	
d. AAS Endowment	73.65	
	883.12	883.12
8. ENDOWMENT DONATIONS		
a. Dwight Moore Endowment	125.00	
b. AAS Endowment - Unrestricted	100.00	
	225.00	225.00
9. MISCELLANEOUS		124.57
<b>TOTAL INCOME</b>		<b>\$13,970.40</b>

## Arkansas Academy of Science

Page 3. Financial Statement, Arkansas Academy of Science

EXPENSES: 20 March 1990 to 20 March 1991

## 1. AWARDS

a. Theresa Hines (#556)	50.00	
b. S. Alzaain (#557)	50.00	
c. John D. Peck, Plaque - Arkansas Science Talent Search (#558)	63.60	
d. Arkansas Junior Academy of Science (#555)	250.00	
e. Arkansas Science Fair Association (#554)	200.00	
	613.60	613.60

## 2. PROCEEDINGS

a. Phillips Litho (Vol. 43) (#551)	107.90	
b. Phillips Litho (Vol. 43) (#559)	8,057.24	
c. Linda Lee, Editorial Consultant Vol. 43 (#552)	500.00	
	8,665.14	8,665.14

## 3. OFFICE EXPENSES

a. Secretary's Office	248.78	
John Rickett (#561)		
b. Treasurer's Office	25.00	
Postmaster (#560)		
	273.78	273.78

## 4. ANNUAL MEETING EXPENSES (ASU)

a. Mr. Trophy (#553)		43.24
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## 5. NEWSLETTERS

a. University of Arkansas, Forest Research (#565)		63.35
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## 6. DUES

a. National Association of Academies of Science (#564)		28.00
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## 7. SERVICE CHARGE

11.90

## 8. MISCELLANEOUS (#562)

16.67

TOTAL EXPENSES 99,715.68

(Rapp; 2nd H. Barton) the Academy appropriate \$250 to provide scholarship awards to winners at the Junior Academy of Science Meeting later this month.

c. Arkansas/Westinghouse Science Talent Search (for John Peck): First place winner was Christopher Brazzel, Pine Bluff High School with the paper, "The Grand Unified Field Theory", and sponsored by Mrs. Jewell Whatley. Second place winner was Ward Daniel Cook, Little Rock Central High School, with the paper, "What are the Nuclear Excited States of Neon-20?", sponsored by Mrs. Annice Steadman, Mrs. Jacqueline Dyer and Dr. Andre Rollefson. Motion: (Rapp, 2nd T. Palko) the Academy appropriate \$150 to recognize the two winners of the talent search and their sponsors. Watson announced the winner at last year's Junior Academy meeting will present the paper at this meeting of the Senior Academy.

8. Watson recognized the Director of the Junior Science and Humanities Symposium, Tom Palko, for a report. The meeting was held 15-17 March, and 114 students and 35 teachers submitted 73 papers, 15 of which were selected to be presented orally. The highlight of the meeting was a four-hour barge trip on the Arkansas River sponsored by the U.S. Corps of Engineers. Last year's national competition was won by an Arkansan, Jesse Sang, Little Rock Central High School, who received a two-week trip to London, England. This year's Arkansas representative to the national competition will be Edith Apple from North Little Rock with the paper, "Hierarchy of Navigation in Red Ants."

9. Watson gave a report from the Nominating Committee; George Harp was submitted as nominee for Vice-President. Opportunity was provided for nominations from the floor, but none came.

10. Watson relayed the report from Leo Paulissen of the Biota Survey Committee. New addenda are being prepared, but none are available at this time.

11. Watson gave a report on the new composition of the Science Education Committee - 12 members, three year terms, four members rotate off each year. There will be a meeting this afternoon after the paper sessions. New members are Tom Lynch, Chair; Bonnie Moody (Henderson State University); Rudy Timmerman (Rich Mountain Community College); and Dalena Tull (University of Central Arkansas). Watson asked Lynch to read the list of the other members.

12. Motion: (Rickett; 2nd T. Palko) the Executive Committee at the Fall 1990 meeting approved the raising of "Associate" membership dues from \$5 to \$10. But the category name should be also be labelled as undergraduate. This will be voted on during the second business meeting.

13. Watson appointed a Resolutions Committee consisting of Robert Wright, Mike Plummer and John Sorensen.

14. Watson announced the acceptance by the Executive Committee of the invitation from the University of Central Arkansas to host the 1992 meeting. We have not received an invitation for the 1993 meeting.

15. Watson encouraged the section chairpersons to keep their paper presentations on time.

16. Watson announced that the Arkansas Science Teachers Association is meeting in conjunction with the Academy. We welcome them and hope their efforts are productive.

17. Watson, in lieu of a representative of the Local Arrangements Committee, announced the banquet. Dr. Terry Cole (NASA) will

5. Watson recognized the *Proceedings* Editor, Harvey Barton, for a report. Individuals pick their copy of the journal and would a representative from each campus return with unclaimed copies going to that campus. Editors should gather manuscripts at the conclusion of paper sessions. Motion: (Barton; 2nd A. Johnson) the Academy appropriate \$500 for editorial assistance to prepare volume 45 (1991) of the *Proceedings*.

6. Watson recognized the *Newsletter* Editor, Dick Kluender, for a report. The cost to the Academy was postage (\$63.35); the Department of Forest Resources (UAM) supports the printing. Thanks R. Wiley for proofreading and J. Rickett for providing mailing labels. Motion: (Kluender; 2nd D. Saugey) the Academy appropriate \$650 to support production of the *Newsletter* in case the next editor cannot find in-house support to this extent.

7. Watson recognized the Director of Science Fairs, Mike Rapp, for a report.

a. Science Fairs: reported on the participation by students and teachers in seven regional fairs and the International Science Fair. Motion: (Rapp; 2nd A. Johnson) the Academy appropriate \$320 to support the Arkansas Science Fair Association. Rapp also moved the Academy officially commend the seven regional science fair directors (2nd H. Barton) (letter attached).

b. Junior Academy of Science (for Pat Knighten): Motion:

## Secretary's Report

speak after dinner. Sigma Xi is sponsoring the banquet speaker. Everyone is invited to the social hour prior to the banquet.

18. Watson reported on the background and mechanics of the "logo contest." No interest shown yet, but it is still open. Wiley knows a graphic designer who might help us design a new logo. Watson also brought some samples of logos from other states.
19. Watson called for new business and hearing none, adjourned the meeting at 12:20.

## SECOND BUSINESS MEETING

President Watson called the meeting to order at 12:10 pm.

1. Watson called for corrections to and approval of minutes from last year's business meetings. No corrections were offered, and approval was by voice vote.
2. Watson recognized Stan Trauth for a report from the Auditing Committee. The committee found the Treasurer's books in order and moved the approval of the Treasurer's report for the year immediately past. Motion carried by voice vote.
3. Watson recognized Treasurer, Robert Wiley for a follow-up on his report in the first business meeting. No further questions came, and Wiley summarized by stating the Academy's financial status is as secure as it has been in recent years. Report approved by voice vote.
4. Watson recognized Secretary, John Rickett for a re-statement of the five motions for continued support:
  - a. H. Barton, editorial assistance: \$500
  - b. D. Kluender, *Newsletter*: up to \$650
  - c. M. Rapp, Science Fairs: \$320
  - d. M. Rapp (for P. Knighten), Junior Academy: \$250
  - e. M. Rapp (for John Peck), Westinghouse Talent Search: \$150

Motions approved as a group by voice vote.

5. Watson recognized the Secretary for a re-statement of the motion to raise "Associate" (Undergraduate) Membership category dues from \$5 to \$10. Motion passed by voice vote.
6. Watson recognized the Nominating Committee's submission of George Harp for Vice-President and opened the floor for further nominations. R. Spears moved G. Harp be elected by acclamation (2nd H. Barton). Motion carried by voice vote.
7. Watson recognized R. Wright for a report from the Resolutions Committee, who then read the following resolutions:

**Be it resolved that:** that the members of the Arkansas Academy of Science express their sincere appreciation to the faculty, staff and students of the University of Arkansas/Fayetteville for hosting our 1991 meeting. We especially thank Dr. John Hehr and his Local Arrangements Committee for all their efforts on behalf of the membership to make this meeting a success. Thanks are due to section chairs, individual presenters, faculty advisors, and judges of student papers. We also recognize the contributions of chapters of Sigma Xi and its individual members to the success of the meeting. Thanks are also extended to Robert Watson, President; Michael Rapp, President-Elect; Richard Spears, Past-President; the remaining officers and other members of the Executive Committee and other committees of the Academy whose cooperative efforts were so apparent during the meeting. Finally we thank Dr. Terry Cole for sharing with us the truly remarkable accomplishments of planetary exploration at the Jet Propulsion Laboratory.

**Be it resolved that:** the members of the Arkansas Academy of Science recognize Dr. Robbin Anderson for his dedicated service as chair of the Science Education Committee. His consistent alertness to legislative issues, government programs and regulations regarding science education has served us well. If he occasionally told us more than we wanted to hear, we probably needed to know it. Ever the gentleman, he has been our distinguished ambassador for science education. We thank him for his service.

**Be it resolved that:** the members of the Arkansas Academy of Science recognize Dr. Paul Krause for his work as Director of the Junior Academy of Science. Organizing and carrying out the annual meeting is a little like being the local arrangements chair for the Academy of Science year after year. And he has done a thoroughly professional job. His contribution toward encouraging and honoring high school students and teachers has made a difference in Arkansas, and we thank him.

8. Watson announced the University of Central Arkansas will host the 1992 Academy of Science. Decision was made at the fall 1991 meeting of the Executive Committee.
9. Watson recognized the Nominating Committee; Jim Daly (UAMS), Dan England (SAU), and Walt Godwin (UAM) and thanked them for their work.
10. Watson announced no invitation has been received yet for the Academy's 1993 meeting. We usually try to plan two years in advance. He solicited an invitation.
11. Watson recognized Leo Paulissen for a follow-up report on the Biota Survey. He is currently preparing a few new lists but doesn't have any ready at the present.
12. Watson called for New Business:
  - a. Announced (for H. Barton) for campus representatives to pick up unclaimed copies of the *Proceedings* and take them back with you. M. Rapp assisted in the disbursing these groups of journal copies.
  - b. Watson asked if the paper judges had made their final decision yet - no.
  - c. A comment from the floor pointed out that two different times publicized for the first business meeting caused some participants to miss it. President: point well taken.
  - d. A comment from the floor drew attention to an error in the journal's instructions to authors page.
  - e. Watson again recognized the Historian's efforts in assembling the historical display. He also reminded the membership to submit items of interest to H. Robison.
  - f. Watson again recognized the Audit Committee, Resolutions Committee, Science Education Committee, and the Judging Committee (Ed Dale, Nancy McCartney, John Dixon and Jeff Demaris). Watson personally thanked the members of the Executive Committee for their contributions during the past year and particularly Mike Rapp and John Rickett.
  - g. Watson recognized Mike Rapp and installed him as the new President. Rapp then presented Watson a plaque of recognition for last year's work as President. Rapp brought attention to a picture of a horsefly embossed on the plaque as representative of Watson's research interests, whereupon Watson replied with a statement about the horsefly's blood-sucking tendencies. A little levity doth lighten the spirit.

## Arkansas Academy of Science

13. M. Rapp, as new President, asked new members to rise and introduce themselves as evidence that the Academy of Science is a family. He also asked life members to rise and introduce themselves. He urged action by those who are willing to facilitate the work of the Academy and continue our tradition of excellence.
14. Rapp recognized John Sorensen who issued an appeal for Academy members to volunteer to judge science fairs.
15. Betty Speairs asked Rapp to introduce our President-Elect, which he did – Art Johnson.
16. Jim Fribourgh asked about the status of the logo contest – Rapp replied no response yet, but it is still open.
17. Rapp placed the meeting in recess until the results of the student paper presentations judging are available.
18. Student winners announced were Annise Evans (UAPB-undergraduate) and Gary Fuller (UALR-GIT-graduate); announced by Ed Dale. Several members simultaneously raised a point of order that two undergraduate awards (life sciences and physical sciences) should be given. The committee will meet again and resolve the issue.
19. President Rapp adjourned the meeting at 12:46 pm.

## MEMBERS 1991

Roger Abernathy	Arkansas State University	regular	Robert H. Doater	University of Arkansas at Fayetteville	regular
Stephen R. Addison	University of Central Arkansas	regular	Robert L. Douglas	Memphis State University	regular
Sam Al-Zaaim	University of Arkansas at Little Rock	regular	Marian Douglas	University of Arkansas at Little Rock	regular
Silke Hufangel Allen	Hendrix College	regular	Mark Draganjac	Arkansas State University	life
Robert T. Allen	University of Arkansas at Fayetteville	regular	Benjamin T. Duhart	University of Arkansas at Pine Bluff	regular
Robbin C. Anderson	University of Arkansas at Fayetteville	life	David Dussourd	University of Central Arkansas	regular
Cynthia Annett	University of Arkansas at Fayetteville	regular	Edson	University of Arkansas at Monticello	sponsoring
John T. Annulis	University of Arkansas at Monticello	regular	Rudolph J. Eichenberger	Southern Arkansas University	regular
Edmond J. Bacon	University of Arkansas at Monticello	life	Thomas K. Ekman	Southern Arkansas University	regular
Robert Bacon	University of Arkansas at Fayetteville	regular	Hudson B. Eldridge	University of Central Arkansas	regular
Claudia Bailey	University of Arkansas at Fayetteville	regular	Robert Engelken	Arkansas State University	regular
Max L. Baker	University of Arkansas/Medical Center	regular	Daniel R. England	Southern Arkansas University	life
Kenneth M. Ball	El Dorado Public Schools	regular	Don England	Harding University	regular
William H. Baltosser	University of Arkansas at Little Rock	regular	Lawana England-Whaley	Arkansas State University	sponsoring
Owen Barber	Arkansas State University	sustaining	Carole Engle	University of Arkansas at Pine Bluff	regular
Harvey E. Barton	Henderson State University	regular	Claude E. Epperson	University of Arkansas/Medical Center	regular
Adolphia M. Basford	Henderson State University	regular	Ray Erickson	U.S. Department of Agriculture	regular
Vernon Bates	Arkansas State University	regular	William L. Evans	University of Arkansas at Fayetteville	life
John Kenneth Beadles	Arkansas State University	regular	Wilbur W. Everett	Ouachita Baptist University	regular
Judith A. Bean	Harmony Grove High School	sustaining	E. Kim Fifer	University of Arkansas/Medical Center	regular
Ashley Bean	Hendrix College	regular	Sheldon Fitzpatrick	University of Arkansas at Pine Bluff	sustaining
John B. Bennett	Arkansas State University	sustaining	M. Doug Fletcher	Riceland Foods Inc. (IASU)	regular
Ann Marie Benson	University of Arkansas/Medical Center	regular	Thomas H., III Fletcher	University of Arkansas/Medical Center	associate
Hal Berghel	University of Arkansas at Fayetteville	regular	E. P. (Perk) Floyd	U.S. Public Health Service (re)	regular
C. Bhuvananeswaran	University of Arkansas/Medical Center	regular	Thomas L. Foti	Natural Heritage Commission	regular
Elsie Bickle	Northeast Louisiana State Univ	associate	Paul B. Francis	University of Arkansas at Monticello	regular
George T. Glavins	University of Arkansas/Medical Center	associate	Winefred Fraser	Arkansas College	regular
Verly Board	Arkansas College	regular	Kenneth Freiley	University of Central Arkansas	regular
Marilyn Bockanick	Arkansas Tech University	regular	James H. Fribourgh	University of Arkansas at Little Rock	life
Laurence J. Boucher	Arkansas State University	regular	Arthur Fry	University of Arkansas at Fayetteville	life
William R. Bowen	University of Arkansas at Little Rock	regular	Gary Fuller	University of Arkansas at Little Rock	regular
Robert E. Bowling	University of Arkansas/Medical Center	sustaining	Kamesh Gadepally	University of Arkansas at Little Rock	regular
Leo H. Bowman	Arkansas Tech University	regular	Charlie Gagen	Arkansas Tech University	regular
Patricia Brackin	Christian Brothers College	regular	Jack Gaiser	University of Central Arkansas	regular
Jimmy D. Bragg	Henderson State University	regular	Diana Garland	Memphis State University	regular
Wilfred J. Braithwaite	University of Arkansas at Little Rock	regular	Gentry Gentry	Arkansas Science & Technology	regular
Marge A. Brewster	Arkansas Childrens Hospital	regular	George Geron	Arkansas State University	regular
John F. Bridgman	University of the Ozarks	regular	Collis R. Giese	University of Arkansas at Fayetteville	life
Arthur V. Brown	University of Arkansas at Fayetteville	regular	John Giesler	Ark. Dept. of Pollution Control	life
Joseph M. Brown	Mississippi State University	regular	Loren J. Gilmour	Chadron State College	associate
Susan G. Brown	University of Arkansas at Little Rock	regular	Mattie Glover	University of Arkansas at Fayetteville	regular
William D. Brown	University of Arkansas at Fayetteville	regular	David Goad	University of Arkansas at Little Rock	associate
Charles T. Bryant	Water Resources of Arkansas	regular	Walter E. Godwin	University of Arkansas at Monticello	life
Gaylen Burnside	University of Arkansas at Little Rock	regular	Kevin D. Golden	University of Arkansas at Fayetteville	associate
Jody Caldwell	University of Arkansas at Little Rock	regular	William E. Gran	University of Arkansas at Little Rock	regular
Chris Carlton	University of Arkansas at Fayetteville	regular	Wayne L. Gray	University of Arkansas/Medical Center	regular
Phyllis Chaffin	Arkansas State University	regular	Robert A. Green	Mississippi State University	regular
Stanley L. Chapman	University of Arkansas at Fayetteville	regular	Edmond E. Griffin	University of Central Arkansas	regular
David Chittenden	Arkansas State University	life	Gaston Griggs	John Brown University	regular
Cisar Cisar	University of Arkansas at Fayetteville	regular	Mark Gross	University of Arkansas at Little Rock	regular
Frances E. Clayton	University of Arkansas at Fayetteville	regular	Peggy Guccione	University of Arkansas at Fayetteville	regular
Malcolm K. Cleaveland	University of Arkansas at Fayetteville	sustaining	Joe M. Guenter	University of Arkansas at Monticello	life
Betty S. Cochran	U.S. Forest Service	regular	Rao P. Gullapalli	University of Arkansas at Little Rock	regular
Lorris G. Cockerham	NCTR Associated Universities	sponsoring	Paul D. Gwinup	Arkansas State University	regular
Richard R. Cohoon	Arkansas Tech University	regular	Bruce Haggard	Hendrix College	regular
Larry Coleman	University of Arkansas at Little Rock	regular	Jeffrey R. Hammersley	UAMS/UALR	regular
R. Lilia Compadre	University of Arkansas/Medical Center	regular	Earl L. Hanebrink	Arkansas State University	regular
Robert L. Cook	Mississippi State University	regular	B. J. Hankins	University of Arkansas at Fayetteville	regular
Janice Lorraine Cooper	Arkansas State University	regular	Richard H. Hanson	University of Arkansas at Little Rock	regular
Robert M. Cordova	Cordco Consulting	regular	Joyce M. Hardin	Hendrix College	regular
Calvin Cotton	Geographics Silk Screening Co.	sponsoring	Harold Hard	Arkansas State University	sponsoring
William Covitts	University of Arkansas at Little Rock	regular	Phoebe A. Harris	Arkansas Highway & Transportation	regular
Bob W. Cowling	Malvern High School	regular	Michael J. Harvey	Tennessee Tech University	regular
Robert M. Crisp, Jr.	University of Arkansas at Fayetteville	regular	Roger M. Hawk	University of Arkansas at Little Rock	regular
Donald Culwell	University of Central Arkansas	sustaining	Heidt	University of Arkansas at Little Rock	life
Edward E. Dale, Jr.	University of Arkansas at Fayetteville	sustaining	Ronnie Helms	University of Arkansas at Fayetteville	life
Fred Dalske	University of Central Arkansas	regular	Christopher C. Hemann	Hendrix College	associate
James J. Daly	University of Arkansas/Medical Center	regular	Musafa Hemmati	Arkansas Tech University	regular
James T. Daniels	Southern Arkansas University/T	regular	Burton Henderson	University of Arkansas at Little Rock	regular
Jerry A. Darsey	University of Arkansas at Little Rock	regular	Larry Hincin	Arkansas State University	regular
Pat Darsey	Holy Souls Catholic School	regular	Dean Hirschi	University of Central Arkansas	regular
Stanley N. David	Arkansas State University	regular	Maxine R. Hite		regular
David L. Davies	University of Arkansas/Medical Center	sponsoring	Lisa J. Hlass	U.S. Corps of Engineers	regular
Leo Carson Davis	Southern Arkansas University	sponsoring	Howard Hodges	University of Arkansas at Little Rock	regular
Jeffery R. Demarest	University of Arkansas at Fayetteville	regular	Kay Holtman	University of Arkansas at Little Rock	regular
Robert H. Dilday	University of Arkansas at Fayetteville	life	William G. Hood	University of Arkansas at Little Rock	regular
Ronald H. Doran	Harding University	regular			
Peggy Rae Dorris	Henderson State University	regular			



## Secretary's Report

Lester C. Arthur	Howick	University of Arkansas at Fayette sponsoring	Mazo	Price	University of Arkansas at Pine regular
Feng Hou	Moyt, Jr.	University of Central Arkansas regular	Denver L. S.	Prince	University of Central Arkansas regular
M. Keith	Huang	University of Arkansas at Fayette regular	Michael W.	Ramaprasad	University of Arkansas/Medical regular
Jim	Hudson	University of Arkansas at Little regular	Jeff H.	Rapp	University of Central Arkansas Life
Julie	Huey	University of Arkansas at Mont regular	Ruby S.	Rettig	George Washington National For regular
Charles A. Paul	Huggins	Union University regular	Edward L.	Reynolds	University of the Ozarks regular
Paul	Hughes	Arkansas State University regular	John D.	Richards	Arkansas State University regular
Philip E. Hyatt	Hunkapiller	Phillips County Community Coll regular	Thomas W.	Rickett	University of Arkansas at Little Life
Joseph U. Igietseme	Hyatt	University of Arkansas at Fayette regular	Johnnie C.	Rimmer	University of Arkansas at Little regular
Duane Jackson	Jalaluddin	University of Arkansas/Medical regular	Henry W.	Roberts	Arkansas State University regular
M. D. Douglas	James	University of Arkansas at Little regular	Marsha	Robison	Southern Arkansas University Life
David	Jimerson	University of Arkansas at Pine regular	Louise	Roope	University of Arkansas/Medical regular
Arthur A. Johnson	Johnson	University of Arkansas at Fayette Life	Ross I.	Root	Southern Arkansas University regular
James E. Johnson	Johnson	Arkansas State University regular	Subhendra N.	Rothrock, III	University of Arkansas/Medical regular
Michael I. Perry Max	Johnston	Hendrix College Life	David A.	Rowe	Stamps High School regular
Suzanne M. Jones	Justice	University of Arkansas at Fayette regular	Andrew C.	Russert-Kraemer	University of Arkansas at Fayette regular
Jay Kannan	Karl	Hettleton High School regular	John A.	Ross	University of Arkansas/Medical regular
Alvan A. Karlin	Karnes	University of Arkansas at Fayette sustaining	Leo	Sanchez	University of Arkansas/Medical regular
Mark	Kehrer	Arkansas State University regular	Frank L.	Scallet	U.S. Forest Service Life
Philip L. Raj V.	Kilambi	Ark. Dept. Pollution Control & regular	Larry	Sealand	Nat. Center for Toxicological regular
Robert T. Maurice G.	Kilwe	University of Arkansas at Little regular	Stephen A.	Setian	University of Arkansas at Fayette regular
Richard	Kluender	University of Arkansas at Fayette regular	Elwood B.	Setliff	John Brown University regular
Roger E., III	Koepp	University of Arkansas at Mont regular	Mostafa	Seward	University of Arkansas at Little regular
Richard A. Randall A.	Komorowski	University of Arkansas/Medical regular	Ali U.	Sewell	USDA-Soil Conservation Service Life
Walter A. Timothy	Kopper	Hendrix College regular	Robert B.	Shade	University of Arkansas at Mont associate
Paul	Korfmecher	National Ctr. for Toxicologica regular	William H.	Shahriar	Southern Arkansas University regular
Jack C.	Kraus	University of Arkansas at Fayette regular	Samuel	Shalkh	University of Arkansas at Little regular
Timothy T. Forrest E.	Kraus	University of Central Arkansas regular	Dewey H.	Shanks	University of Arkansas at Little regular
Norman	Kraus	Fayetteville Public Schools regular	Robert	Sharrarh	University of Arkansas at Fayette regular
Linda A. Lee	Ku	University of Arkansas at Fayette regular	Tom	Shepherd	Arkansas Natural Heritage Comm regular
Jerry L. Linnsaeder	Lane	Arkansas State University regular	Edwin B.	Siegel	University of Arkansas at Fayette regular
J. Mitchell	Lavers	Pocahontas Middle School regular	Kenneth L.	Sifford	Arkansas State University regular
Thomas J. Lynch	Lee	Arkansas State University regular	Robert	Sims	University of Arkansas at Little regular
Siripong	Linnsaeder	University of Arkansas at Fayette regular	Tom	Statton	NLR High School, East Campus regular
Alli	Lockhart	University of Arkansas at Little regular	Edwin B.	Smith	University of Arkansas at Fayette regular
Mitchell K. Daniel L.	Malasri	Christian Brothers University regular	Kenneth L.	Smith	Governor's Office (attache) regular
Michael L. Herbert M.	Mansouri	University of Arkansas/Medical regular	Kimberly G.	Smith	University of Arkansas at Fayette regular
Robin	Marks	Arkansas State University regular	Roy J.	Smith, Jr.	U.S.D.A./Univ. of Arkansas regular
Donald R. M. K.	Marsh	Henderson State University sustaining	L. Dale	Snow	Louisiana Tech University regular
Chris T. Russell B.	Martin	Arkansas State University associate	Clifford S.	Snyder	University of Arkansas at Fayette regular
Nancy Glover	Matthews	Henderson State University regular	David G.	Snyder	Arkansas Natural Heritage Comm regular
Clark W. Rose	Matthews	University of Arkansas at Little associate	W. Sherman	Sorensen	University of Arkansas/Medical regular
Notland E. V. Rick	McDaniel	University of Pittsburgh Life	Betty H.	Spears	Quachita Mtns. Biological Stat Life
Paul	McDaniel	University of Arkansas at Little regular	Richard A.	Spears	Quachita Mtns. Biological Stat Life
Clarence E. Dennis W.	McMahon	University of Arkansas at Little regular	Stan	Speight	Arkansas State Parks Department regular
Harlan	McMillan	Henderson State University regular	Frederick W.	Steele	University of Arkansas at Fayette regular
Pamela J. Tammie	McRae	Arkansas Tech University regular	Richard W.	Steele	U.S. Forest Service regular
Rahul	Mehta	University of Arkansas/Medical associate	Kenneth F.	Steigerwald	University of Arkansas at Fayette regular
Richard	Meyer	National Ctr. for Toxicologica regular	Ann	Steinmeier	Baptist Medical Center regular
Lawrence A. Angel	Mink	University of Central Arkansas regular	T. W.	Steward	Arkansas State University regular
Richard S. Sanjay K.	Mintz	University of Arkansas at Fayette regular	Eric	Sundell	University of Arkansas at Mont sustaining
Robert A. Clementine	Mitra	Arkansas State University regular	Mark	Sutherland	Hendrix College regular
Leland F. Stephen R.	Mittelstaedt	University of Arkansas at Little regular	Keith	Tappin	Hendrix College regular
Michael	Moore	National Center for Tox. Resea Life	Phillip	Taylor	University of Arkansas at Mont regular
Joseph C. Nathaniel	Morgans	University of North Texas regular	William S.	Taylor	University of Central Arkansas regular
Thomas	Moulton, III	Arkansas State University regular	Sandy	Tedder	University of Arkansas at Fayette regular
W. Donald	Murphy	University of Arkansas at Fayette regular	George E.	Templeton	University of Arkansas at Fayette regular
William F. Alex R.	Neal	Ark. Dept. Pollution Control & regular	Lyell	Thompson	Arkansas State University regular
Joe	Nehus	Arkansas Tech University regular	Dan	Timmerman	Newark High School regular
Gaylord M. Timothy J.	Nelson	Arkansas State University regular	Lorraine	Timmerman	Rich Mountain Community Colleg regular
Timothy J. Olson	Newton	University of Arkansas at Mont regular	Rudy	Torrans	University of Arkansas at Pine regular
Derrick M. Tom	Nicholson	University of Arkansas at Fayette regular	Stanley E.	Trauth	Arkansas State University regular
Bryan D. Leo J.	Nisbet	Quachita Baptist University regular	Garry	Tucker	U.S. Forest Service Life
Mark A. John E.	Nix	University of Arkansas at Little regular	Ren	Tumison	Henderson State University regular
Forrest	Northrop	University of Arkansas/Medical regular	Turner	Ulrich	Quachita Baptist University regular
Carol J. James H.	O'Brien	Arkansas State University regular	Victor K.	Vere	University of Arkansas at Fayette regular
John D. Bill	Olson	University of Arkansas at Little regular	Tito	Viswanathan	University of Arkansas at Little regular
Carlos H. Mark A.	Oosterhuis	Arkansas Tech University Life	David L.	Vosburg	Arkansas State University regular
Albert B. Michael V.	Palko	Henderson State University regular	George H.	Wagner	University of Arkansas at Fayette regular
Roberta Dee	Palmer	University of Arkansas at Fayette regular	Ernest M.	Walker	UAMS/McClellan VA Hospital regular
Donna	Paulissen	Slippery Rock University regular	Richard B.	Walker	University of Arkansas at Pine regular
Gayle L. Ervin W.	Payne	University of Arkansas/Medical regular	Stephen A.	Walker	Arkansas Tech University regular
Harold	Peck	FTN Associates regular	David L.	Wankum	University of Arkansas at Little regular
Alan D.	Peck	University of Arkansas at Little Life	Robert L.	Watson	University of Arkansas at Little sustaining
	Pell	University of Central Arkansas regular	James O.	Weaver	Veterans Administration Medica sustaining
	Pennington	U.S. Forest Service regular	David	Weaver	Arkansas State University regular
	Pippenger	USAE Waterways Experiment Stat regular	Karen	Weaver	University of Central Arkansas regular
	Pittman	University of Arkansas/Medical regular	Jerry	Webb	University of Arkansas at Mont regular
	Plummer	Arkansas Natural Heritage Comm regular	G. J.	Weidemann	University of Arkansas at Fayette regular
	Pond	Harding University regular	David	Wennerstrom	University of Arkansas/Medical regular
	Porter	University of Arkansas at Fayette associate	Delores	Wennerstrom	Pulaski Academy associate
	Pounds	University of Arkansas at Pine regular	Dora	White	University of Arkansas at Fayette regular
	Powell	University of Arkansas/Medical sustaining	Jonathan	Wickliff	University of Arkansas at Fayette regular
	Pray	University of Central Arkansas regular	James L.	Wigley	University of Arkansas at Mont Life
	Price	Ark. Dept. Pollution Control & sustaining	T. Bentley	Wiley	Arkansas State University regular
			Robert W.	Willingham	University of Arkansas at Pine regular
			J. D.	Willis	Southern Arkansas University regular
			William M.	Willis	University of Arkansas at Little associate
			Rebecca L.	Wilson, Jr.	Harding University regular
			Jason	Woolf	University of Arkansas at Fayette regular
			Edmond W.	Woolf	University of Central Arkansas regular
			Heather L.	Wright	University of Central Arkansas regular
			Robert D.	Wyatt	University of Arkansas at Little regular
			Chaoping	Wyatt	Arkansas State University regular
			William V.	Yach	Arkansas Game & Fish Commissio regular
			Karen L.	Yang	Arkansas Tech University regular
			Chia C.	Yang	University of Arkansas at Little regular
			Dominic T.	York	University of Arkansas/Medical regular
			J. Lyndal	Young	Fayetteville Public Schools regular
			David A.		

# **PROGRAM**

## **Arkansas Academy of Science**

**Seventy-fifth Annual Meeting**

**5-6 April, 1991**

**University of Arkansas at Fayetteville**

**Fayetteville, Arkansas**

**Meeting concurrently with sessions of**

**The Collegiate Academy of Science**

### **Friday, 5 April, 1991**

Registration  
Executive Committee  
First Business Meeting  
Exhibits and Refreshments

#### **Paper Sessions**

Students I - Botany/Ecology/Aquatics  
Botany I/ Biomedical  
Microbiology  
Physics/Engineering I  
Fish Biology

#### **Hospitality Hour**

Sponsored by University of Arkansas for Medical Sciences

#### **Banquet**

Speaker: Dr. Terry Cole

*Beauty on a Planetary Scale: A Summary of What Has Been  
Learned Through Remote Sensing of the Planets*

### **Saturday, 6 April, 1991**

Registration  
Exhibits and Refreshments  
Second Business Meeting

#### **Paper Sessions**

Students II - Vertebrates/Microbiology/Biomedical/  
Chemistry/Engineering  
Botany II/Science Education  
Aquatics/Invertebrates  
Chemistry/Engineering II  
Vertebrates/Geology

#### **Sigma Xi Breakfast**

The traditional Sigma Xi Breakfast will be held at the Ozark Mountain Smokehouse on Dickson Street on Saturday, 6 April, 1991, beginning at 7:00 am.